



TUOLUMNE – STANISLAUS INTEGRATED REGIONAL WATER MANAGEMENT REGION

2014 IRWM DROUGHT GRANT PROPOSAL

ATTACHMENT 7 – PROGRAM PREFERENCES

**Integrated Regional Water Management Program
Applicant: Tuolumne-Stanislus Integrated Regional Water Management Authority**

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Groveland Community Services District Water Filtration System (TS IRWM Project No. 32)

The project complies with the following Program Preferences:

Address critical water supply or water quality needs of a DAC within the region. GCSD's service area includes the communities of Groveland and Big Oak Flat. GCSD's service area coincides with the boundaries of the Groveland Census Designated Place. According to the 2010 US Census the Groveland CDP's median household income was \$33,772 which is less than 60 percent of the State's MHI. Therefore, Groveland and Big Oak Flat are Disadvantaged Communities (DACs).

Addresses the following Statewide Priorities:

Drought Preparedness. The water filtration project will prepare GCSD to provide safe drinking water using surface water from various sources, not only Hetch Hetchy. Applying for another filtration avoidance permit from Cherry Reservoir would not achieve the same level of preparedness. During extended drought periods, SFPUC may introduce water from other sources into the Mountain Tunnel or water quality in Hetch Hetchy may deteriorate. GCSD's proposed water filtration system will increase the reliability of the water system by having a physical barrier that removes pathogens from the raw water rather than relying on disinfection alone.

Use and Reuse Water More Efficiently. GCSD's current water system avoids filtration. Colloidal particles in the raw water pass through the storage tanks and end up in the distribution system. GCSD maintains a regular flushing program to clean sediment from the distribution system. The flushing program wastes 980,000 gallons of water annually. The use of a filtration system will reduce the colloidal particles in the treated water that enter the distribution system and will reduce the frequency of flushing, thereby conserving water. GCSD estimates the filtration system will reduce the flushing frequency in half saving about 490,000 gallons annually.

Climate Change Response Actions. GCSD currently provides chloramination followed by UV disinfection in lieu of filtration. Adding filtration will eliminate the need to provide UV disinfection. UV lamps used in the disinfection require a significant amount of power to operate. GCSD estimates that eliminating UV will reduce GCSD's energy consumption at the Second Garrote Site by approximately 262,800 kWh annually.

Ensure equitable distribution of benefits. GCSD supplies water to the communities of Groveland and Big Oak Flat. Both of communities are considered small disadvantaged communities according to the 2010 US Census Median Household Income. This water filtration system will provide safe, clean and affordable drinking water to residents within those DACs. It addresses the Human Right to Water within those DACs.

Tuolumne County Resource Conservation District Regional Water Conservation Program (TS IRWM Project No. 36)

The Regional Water Conservation Program is by its nature a **"Regional Program"** that is designed specifically to integrate and coordinate conservation activities throughout the upper Stanislaus and Tuolumne River watersheds. The program **provides drought resiliency** for the long term. The program addresses several TSIRWM Plan objectives and statewide priorities through the promotion and implementation of conservation-based water use efficiencies resulting in a potential savings of up to 186 acre-feet of potable water per year region-wide.

The program responds immediately to the 2014 **drought** by reducing our community's water consumption in late summer to ensure adequate supply availability. This will be accomplished by rapidly identifying residential and industrial high volume water users, focusing specifically on those

properties with a high probability for reduced water consumption in industrial processes, and turf and landscape watering.

Highly visible demonstration rain gardens or landscape projects will feature the use of vegetated swales, infiltration devices, pervious hardscapes, drought resistant plants, and other stormwater management and water efficiency improvements. The demonstration areas will provide businesses and the general public with an on-the-ground example of how to design a water efficient landscape that can **capture, store, percolate, and manage stormwater runoff, protect and increase local groundwater resources, and significantly decrease potable water usage.**

Residential users and disadvantaged community members will be provided on-site water audits which will result in identification of water conservation improvement project alternatives and an aggressive incentive funding program. The significantly reduced per-connection consumption will **reduce current and future drought impacts** and provide supply buffers during drought that result in less severe and less frequent calls for water conservation. Incentives covering a high percentage of end-user costs will be provided for approved, non cost-effective activities including: Turf buyback (abandonment) and/or conversion to drought tolerant landscape, Smart Home and irrigation technology implementation including subsurface systems, smart controllers, moisture sensors and remote controls, greywater reuse irrigation systems including laundry-to-landscape and shower/sink lateral drain, Rainwater harvest and irrigation systems, vacation home shut-off valves, restaurant and hotel programs, and fixture and appliance upgrades.

This program will effectively address **long-term drought preparedness** by promoting water use and reuse through rainwater harvesting, landscape modification, and installation of water efficient fixtures – each of which can reduce overall potable demand and contribute to sustainable water supply and reliability during water shortages. Laundry-to-landscape, rain barrel/cistern and other landscape modifications can yield almost half of the projected savings. Old, inefficient fixtures such as toilets, urinals, washers, and commercial spray valves require nearly double the volume of water compared to high efficiency fixtures. The increased use of water for flushing toilets and urinals and washing clothes generates more wastewater flows to the wastewater treatment plants and private on-site waste water treatment (septic tanks) and ultimately into the surface and ground waters of the Region. . A volumetric reduction will **improve surface and ground water quality** and also result in avoided wastewater treatment costs and increase the longevity of on-site systems. Installation of water efficient fixtures and appliances will lead directly to a lower volume of water needing to be pumped and/or heated and therefore a decrease in the amount of power necessary to pump and heat that water. **Power consumption for these tasks will likely decrease** between 20% and 50% depending on the type of fixture or appliance being replaced.

Runoff from over-watering landscapes and/or unmanaged stormwater currently runs into roadways and eventually into local surface waters. The runoff contains fertilizers and pesticides that have been applied to the landscapes, along with other pollutants including salts, pathogens, and fecal coliforms. The runoff eventually drains to the San Joaquin River and San Francisco Bay-Delta. Reductions in dry weather runoff pollution will result from water efficient landscaping, and irrigation equipment installation. Greywater and rainwater systems directed to occur in strategic locations will free up water source, water treatment/distribution and sewer collection system capacity of 30% to 50% for each mid-sized system installed and creating a **water supply** buffer to provide system **reliability for existing users.**

Much of the water supplied by TUD comes from the Pinecrest Lake/Lyons Reservoir/Phoenix Lake system. The reduction of water consumption during mid-summer will potentially reduce Pinecrest

Lake drawdown, thereby **reducing recreation conflicts**. In addition, modifications to instream flows and lake levels will rarely be necessary during drought, **reducing ecosystem conflicts**.

The Regional Conservation Program includes a specific component designed to address water usage within the numerous small and disadvantaged communities and those communities facing the greatest water challenges within the region. This program will contribute to regional compliance with AB685 by assisting the communities with **water accessibility and affordability** and by supporting the water provider's efforts to **maintain safe, clean, sufficient and reliable sources** of water for personal and domestic uses.

Reducing water demand during peak periods results in much less stress on treatment systems, which increases treated water quality. Water conservation programs and drought response are huge financial drains on the local water utility. This project will significantly **reduce utility expenses for these efforts**, reduce the demand on groundwater from private wells, **decrease potential incidents of well failure** region wide and **provide additional supplies** for public system reliability and water quality during high demand periods. This project will result in a sustainable water conservation program structure and process that can live on in "maintenance" mode with minimal staffing and investment in perpetuity.

Tuolumne Utilities District Phoenix Lake Preservation and Restoration – Phase 3 (TS IRWM Project No. 39)

The Phoenix Lake Preservation and Restoration – Phase 3 project is an integrated regional project that provides many benefits consistent with Program Preferences and Statewide Priorities. Phoenix Lake is an 88-acre water storage reservoir located approximately 3 miles east of the City of Sonora in Tuolumne County, California. Phoenix Lake water rights and facilities, as well as portions of the lake, are owned by the TUD. The TUD uses the lake as the raw water supply for more than 10,000 people as well as numerous commercial and industrial users, it is the primary drinking water source for the communities of Sonora, Jamestown, Scenic View and Mono Village. The service area of Phoenix Lake is 83% DAC and **address critical water supply or water quality needs of DACs within the region**. The lake also serves as a principle fill source for CAL FIRE helicopter operations and is used for non-motorized, non-contact recreation by adjacent homeowners and to a limited degree by the general public. The project will also **Expand Environmental Stewardship** by enhancing ecologically important aquatic habitat and wetland.

The contemporary Phoenix Lake Reservoir was constructed in 1880. Since that time the storage capacity of the lake has decreased substantially due to sedimentation. A comparison of bathymetric surveys from 2002 and 2010 suggests that on average approximately 4,600 cubic yards (cy) of sediment enters the lake annually. This sediment delivery estimate is more than three times the rate reported in previous studies. While the allowable storage capacity of the lake is approximately 900 acre-feet (ac-ft), the current capacity is only 600 ac-ft. Reduced lake capacity affects the water quality at Phoenix Lake, which is marginal at times and is declining due to nutrient inputs, sedimentation and exotic invasive aquatic vegetation. When implemented, the Lake Plan will restore storage capacity in the reservoir while preserving recreational, aesthetic and wetland values at the lake and **extend the life of the reservoir by more than 85 years**. Sediment management activities in wetland areas will further increase the life of the reservoir by trapping sediment in locations that can be regularly maintained with conventional equipment.

The Phoenix Lake Preservation and Restoration (PLPR) - Phase 3 project is designed to **improve the water quality and restore storage capacity** in Phoenix Lake and the Phoenix Lake watershed. A very comprehensive and diverse plan has been developed for the restoration and preservation of Phoenix Lake and the surrounding watershed (Phase 1). Phase 2 (in progress, funded by Round 2 IRWM Implementation Grant) will finalize the 30% design completed in the plan, complete all necessary

environmental reviews and obtain the required permits to implement the plan and excavate approximately 45,000 cubic yards(cy) of sediment restoring 28 acre-feet(ac-ft) of storage capacity. Due to the 2014 drought, the ability and need to store water is crucial. 95% of the water TUD provides to customers is surface water (snowmelt). As of June 4, 2014 TUD has been operating solely from water stored in existing reservoirs. In order to meet the demands of residential and commercial users and provide the Human Right to Water, TUD needs to expand storage volumes.

Twain Harte Community Services District Shadybrook Well (TS IRWM Project No. 40)

The Shadybrook Well Project addresses the following IRWM Program Preferences:

Includes regional projects and integrates water management programs. Although THCS D will own and operate the Shadybrook Well, the project has a region-wide impact on water supply. Like THCS D, the majority of Tuolumne County relies on the surface water provided by Tuolumne Utilities District (TUD) as its only water supply source. This project relieves demand on that regionally shared water source by 80 acre-feet per year. It also directly provides water to TUD during emergency and annually scheduled outages of the surface water source through an existing waterline intertie.

Addresses critical water supply needs of DAC's within the region. Approximately 90% of the THCS D service area lies within the boundaries of a designated disadvantaged community. Without the project, water supply during this drought and future water shortages may not be sufficient to supply the basic water needs – health, sanitation, fire suppression – of the disadvantaged community. Additionally, much of Tuolumne County that solely relies on the surface water provided by TUD is located within designated disadvantage communities, including two federally recognized tribes. By relieving the demand on that shared water supply, this project is improving critical water supply to other disadvantaged communities.

Reduces reliance on the Sacramento-San Joaquin Delta. THCS D's primary water source is the South Fork Stanislaus River, which is one of the headwater rivers for the Sacramento-San Joaquin Delta. The Shadybrook Well Project will reduce diversions from the South Fork Stanislaus River by 80 acre-feet per year, essentially increasing flows to the Sacramento-San Joaquin Delta by the same amount.

The Shadybrook Well Project addresses the following specific Statewide Priorities:

Drought Preparedness. The project provides local and regional access to a new, reliable water source, increasing water supply reliability during the current drought and future droughts. Reliability is also achieved by diversifying the type of water supply available. Most of Tuolumne County relies on a single surface water source. The addition of groundwater provides a source that is normally less affected by drought. This additional source provides a regional impact by reducing the demand on the single surface water source and by supplying water to TUD via a water system intertie.

Climate Change Response. The single water supply source provided to most of Tuolumne County (including THCS D) is highly dependent on snowpack and does not have adequate storage to capture enough rainfall to adequately supply the region in summer months if snowpack is severely minimized by climate change. The Shadybrook Well Project provides a water supply source that is not reliant on snowpack and, therefore, provides reliability in the face of climate change.

Ensures Equitable Distribution of Benefits. The project is a multi-benefit project whose primary benefit is provided to a disadvantaged community (90% of THCS D's service area is considered a disadvantage community). Additionally, the project improves water reliability to DAC's who rely on TUD for their sole source of water. These DAC's includes two Native American Tribes.

Human Right to Water Policy

The Shadybrook Well Project supports The Human Right to Water Policy by ensuring THCS D's residents have water for human consumption, cooking and sanitary purposes. This is especially true of

THCSD during the present drought since THCSD's sole water source (purchased from TUD) is not adequate to meet normal demands. As a result, THCSD must comply with TUD's conservation measures that cut THCSD's water supply by 50%. Because Twain Harte is a mountain town with very little non-natural landscaping, it cannot depend, like most of California, on restricting outdoor watering to meet this reduction. Instead, THCSD customers must severely cut indoor water use to meet the mandatory conservation requirements. A 50% reduction in the average THCSD residential household equals 30 gallons/day per capita. This level of water use threatens health, safety and the basic human right to water – the State Water Resources Control Board has stated in recent drought presentations that 55 gallons/day per capita is the minimum amount required for basic human needs.

This situation becomes even more critical during the summer months when Twain Harte's population doubles due to tourism. Without an alternative water supply, the human right to water will continued to be threatened in Twain Harte.

Tuolumne Utilities District Matelot Reservoir (TS IRWM Project No. 41)

The Matelot Reservoir Enlargement Project **addresses critical water supply and water quality** needs of disadvantaged communities within the Columbia Water System. Approximately 67 percent of the Columbia Water System lies within a designated DAC with a median household income of \$33,494. The Matelot Reservoir Enlargement Project **addresses effectively integrating water management with land use planning**. The property on which the reservoir resides is designated for agriculture use and the desires of the property owner are for the property to remain agriculture only. The expanded Matelot Reservoir accommodates the larger reservoir without allowing other development on the property. Water quality in the reservoir is improved and protected by the installation of fencing that will prevent livestock from having direct contact with the water.

The Matelot Reservoir Enlargement Project is part of an IRWM Plan that will increase the water that is available to the **San Joaquin Delta for Water Supply**. The larger reservoir will allow increased time for particles to settle to the bottom of the reservoir before leaving the reservoir to go to the treatment plant. Therefore, the overall water treatment process will use less water to treat the water which will allow less water to be diverted from the South Fork of the Stanislaus creating more water availability to be used for the Bay Delta.

The Matelot Reservoir Enlargement Project will address Statewide Priorities in terms of **reducing greenhouse gas emissions** primarily through the function of avoidance of pumping. The Matelot Reservoir Enlargement Project will displace the need to pump an estimated six acre-feet of water during annual ditch outages. The New Melones pipeline is approximately 18,000 feet in length and the New Melones Lake elevation resides approximately 1,500 feet lower in elevation than the Matelot Reservoir. The energy required to pump this volume is estimated at 3,500 KWH per acre-foot or a total of 21,000 KWH annually. The new configuration of the Matelot Reservoir will support needed additional water to be conveyed and stored in the reservoir by gravity instead of pumping for the life of the reservoir.

The Matelot Reservoir Enlargement Project addresses the Human Right to Water Policy by providing the Columbia Water System with clean, safe and reliable drinking water. The additional storage in the larger reservoir will provide reliability to the Columbia Water System during ditch outages and result in a reduction of water treatment and associated treatment costs.